

Title Evaluation of grape flesh texture by an acoustic vibration method
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Citation Postharvest Biology and Technology, Volume 62, Issue 3, December 2011, Pages 305-309
Keywords Acoustic vibration; Grape; Piezoelectric sensor; Quality evaluation; Food texture

Abstract

Destructive acoustic vibrations produced by probe penetration were measured by a texture measurement device to clarify the characteristic flesh texture of nine grape cultivars and to examine methods for quantitative evaluation of grape flesh texture. The texture index (TI) is based on the energy density between 10 Hz and 3.2 kHz and was calculated using signals obtained with a piezoelectric sensor attached to a wedge-tipped probe. Using this index, we successfully classified nine grape cultivars according to flesh texture as crisp, non-crisp, or intermediate. The breaking force measured by a conventional puncture test did not identify these three types of texture. The breaking force was correlated with the TI calculated using 0–50 Hz vibrations but not with that calculated using the 10–3.2 Hz vibrations. This suggests that the former represents flesh firmness, and TI values measured at frequencies greater than 10 Hz evaluate characteristic textures of grape flesh that could not be evaluated using a load sensor installed in a conventional stress–strain analyzer.